



ENGINEERING MATERIAL SPECIFICATION

Material Name

Specification Number

PERFORMANCE REQUIREMENTS, ADHESIVE FOR BONDING PLASTIC BUMPERS

ESB-M11P38-B

1. SCOPE

This specification defines the performance requirements of an adhesive or adhesive system for bonding plastic bumpers.

2. APPLICATION

This specification was released originally for adhesives used to structurally bond plastic bumper assemblies.

This specification does not describe initial adhesive cure conditions. The procedures for assembly bonding shall be prescribed in accordance to adhesive manufacturer and part supplier recommendations.

Materials meeting this performance specification are identified on the Corporate Approved Source List.

Compliance with this performance specification does not guarantee the structural adhesive will function for all potential applications on a vehicle. The specific design condition should be evaluated by a plant trial or laboratory simulation prior to release of the material.

3. REQUIREMENTS

Material specification requirements are to be used for initial qualification of materials.

3.1 QUALITY SYSTEM REQUIREMENTS

Material suppliers and part producers must conform to the Company's Quality System Requirements.

3.2 CONDITIONING AND TEST CONDITIONS

All test values indicated herein are based on material conditioned in a controlled atmosphere of 23 +/- 2 °C and 50 +/- 5 % relative humidity for not less than 24 h prior to testing and tested under the same conditions unless otherwise specified.

Date	Action	Revisions
2000 08 30	Revised	Updated A. Cockman
1989 08 31	DR 10033752	Released E. Rezendes MP

Printed copies are uncontrolled

Page 1 of 6

ENGINEERING MATERIAL SPECIFICATION

ESB-M11P38-B

3.3 SHEAR ADHESION

Minimum load specified
or substrate breakage

Subject bonded test assemblies to the following exposures:

- Normal, min
(Condition for 30 min at specified
temperature prior to test)
- 3.3.1 Test at 23 +/- 2 °C 2.4 MPa
- 3.3.2 Test at 88 +/- 1 °C 1.0 MPa
- 3.3.3 Test at -29 +/- 1 °C 4.2 MPa
 - Environmental Aged, min
- 3.3.4 1000 h heat age at 88 +/- 1 °C 2.8 MPa
- 3.3.5 1000 h humidity at 38 +/- 2 °C and
95 - 100% RH 2.3 MPa
- 3.3.6 1000 h water immersion described
per FLTM BI 4-1 1.3 MPa
- 3.3.7 240 h salt spray described per
ASTM B 117 1.7 MPa
- 3.3.8 10 thermal cycles: 2.9 MPa
4 h at 88 +/- 1 °C, 4 h humidity (38 +/- 2 °C and 95 - 100 % RH), 16 h at -29 +/-
2 °C

Test Method:

- Prepare a minimum of 3 test assemblies per test condition as illustrated in Figure 1.
- Test substrates shall consist of 100 x 25.4 x 3 mm coupons identified in para 5.
- Bond test coupons and condition at 23 +/- 2 °C until full adhesive cure.
- Subject test assemblies to the environments listed above.
- Allow test assemblies to condition 24 h minimum after environmental exposure before pull test.
- Conduct shear pull test on a tensile tester at a rate of 13 mm per minute.
- Report peak load at failure and indicate type of failure mode.